CECW-PM (1105-2-10a)

SUBJECT: Comprehensive Everglades Restoration Plan, Central and Southern Florida, Caloosahatchee River (C-43) West Basin Storage Reservoir Project, Hendry County, Florida

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on ecosystem restoration improvements for the Caloosahatchee River (C-43) West Basin Storage Reservoir project, located in Hendry County, Florida. It is accompanied by the report of the district and division engineers. These reports are in response to Section 601(d) of the Water Resources Development Act (WRDA) of 2000, which authorized the Comprehensive Everglades Restoration Plan (CERP) as a framework for modifications and operational changes to the Central and Southern Florida Project that are needed to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. WRDA 2000 identified specific requirements for implementing components of the CERP, including development of a decision document known as a Project Implementation Report (PIR). The Caloosahatchee River (C-43) West Basin Storage Reservoir Project is a component of the CERP that was not specifically authorized in that Act. As such, Congressional authorization is required subsequent to review and approval of a PIR by the Secretary of the Army. The requirements of a PIR are addressed in this report. Preconstruction engineering and design activities for this Project will be continued under the cited authority.

2. The PIR recommends a project that significantly contributes to two of the ecologic goals and objectives of the CERP: improving habitat and functional quality and improving native plant and animal species abundance and diversity. In addition, it contributes to the socioeconomic objective of providing recreational and navigation opportunities. Scientists have established that a mosaic of uplands, freshwater marsh, deep water sloughs, and estuarine habitats supporting a diverse community of fish and wildlife was one of the defining characteristics of the pre-drainage Everglades ecosystem. Currently in South Florida, habitat function and quality has significantly declined in remaining natural system areas due to water management projects and practices, resulting in a loss of suitable nesting, foraging, and fisheries habitat and a decline in native species diversity and abundance. The PIR reconfirms information in the CERP and provides project-level evaluation of costs and benefits associated with construction and operations of a reservoir. Constructing and operating a reservoir would reduce the extreme salinity changes in the Caloosahatchee Estuary by providing a more consistent flow of fresh water discharging at S-79, the W.P. Franklin Lock and Dam, into the Caloosahatchee River

[1] This report contains the proposed recommendation of the Chief of Engineers. The recommendation is subject to change to reflect Washington level review and comments from Federal and State agencies

Estuary. The extreme fresh water fluctuations are due to fresh water flows from basin runoff and releases from Lake Okeechobee. Due to the advanced land acquisition activities conducted jointly by the Federal Government and the State of Florida, the Project can be implemented relatively quickly, significantly advancing the realization of project benefits in the area..

3. The reporting officers recommend implementing the Caloosahatchee River (C-43) West Basin Storage Reservoir to improve the ecological function of the Caloosahatchee Estuary by capturing and storing the excess surface water runoff from the Caloosahatchee River watershed (or C-43 Basin) and excess releases from Lake Okeechobee. Stored water will then be discharged to the estuary during the dry season to augment existing inadequate flows. The project site is located on farmland adjacent to the Caloosahatchee River (C-43) canal in Hendry County and totals approximately 10,700 acres. The reservoir will require approximately 10,480 acres of land in fee and 20 acres of perpetual channel easement. Approximately 200 additional acres will be required on a temporary basis during project construction for staging areas. Project lands were acquired with a 50 percent Federal cost-share using funds appropriated via the 1996 Federal Farm Bill specifically designated for the acquisition of lands to restore the South Florida ecosystem. Major features of the 170,000 acre-foot reservoir include external (dam) embankments varying in height from 32-37 feet above existing grade, soil-bentonite slurry walls within and beneath the external embankments, an internal (dam) embankment separating the two reservoir cells with an approximate height of 31 feet above existing grade, placement of soil cement on interior embankment slopes to protect against erosion, an inflow pump station consisting of diesel-powered pumps with a total pumping capacity of 1,500 cfs, a perimeter canal; and pump station consisting of electric-powered pumps with a total pumping capacity of 195 cfs, and numerous spillways, culverts, perimeter canal structures, an internal cell balancing structure, and outlet structures. The project also includes water quality and ecological monitoring during and after construction, with post-construction ecological monitoring extending for a period of 5 years. Recreational opportunities are also provided at the site within the project footprint.

4. The total first cost of the recommended plan, based on October 2006 price levels, is estimated to be $507,240,000. In accordance with the cost-sharing requirements of Section 601(e) of the WRDA 2000, the Federal cost of the recommended plan would be $ 253,620,000 and the non-Federal cost would be $253,620,000. The estimated lands, easements, right-of-way, and relocation costs for the recommended plan are $80,420,000, of which approximately $27,930,000, has been provided to the State of Florida through the Federal Farm Bill. Based on October 2006 price levels, a 40-year period of economic evaluation and a 4.875 percent discount rate, the equivalent annual cost of the proposed project is estimated at $35,100,000, which includes operation, maintenance, repair, rehabilitation and replacement (OMRR&R), interest and amortization. The estimated annual costs for restoration OMRR&R are $3,000,000. As a component of the CERP program, the interagency/interdisciplinary scientific and technical team, formed to ensure that system-wide goals are met, will participate in the annual monitoring to assess system-wide changes. In accordance with Sections 601(e)(4) and 601(e)(5)(D) of WRDA

2000, restoration OMRR&R costs and adaptive assessment and monitoring costs will be shared equally between the Federal Government and the non-Federal sponsor. The OMRR&R costs for recreation are estimated at $25,000. OMRR&R costs related to recreation features will be funded 100 percent by the non-Federal sponsor.

5. To ensure that an effective ecosystem restoration plan was recommended, cost effectiveness/ incremental cost analysis techniques were used to evaluate alternative restoration plans. The plan recommended for implementation is an increment of the National Ecosystem Restoration (NER) plan, it supports the adaptive incremental restoration recommendations established by the National Research Council, and it meets the policy criteria established in USACE guidance for planning in a collaborative environment. The recommended plan provides benefits by: 1) reducing harmful discharges to the Caloosahatchee Estuary by capturing a portion of high flow releases from Lake Okeechobee and basin runoff from the lower West Caloosahatchee River Basin during the wet season, 2) storing the water until needed in a reservoir, and 3) discharging stored water to supplement inadequate flows over S-79 to Caloosahatchee Estuary during the dry season, thereby reducing stress on the natural system. Hydrologic output comparisons were made between the flow frequency distribution of each alternative plan and the target frequency distribution for the combined monthly and weekly average freshwater inflows at S-79 for a nine year period of record. The nine years chosen out of the 36 year period of record contain three wet, three dry and three normal years. Biological outputs used to compare plans are based on several parameters that indicate the degree to which natural vegetative conditions and key indicator species are restored. The parameters for both hydrologic outputs and biological outputs are based on established peer-reviewed hydrologic and conceptual ecological models developed to guide the restoration of the South Florida ecosystem.

6. This project is a key element among the 68 different components that comprise the CERP. It produces minor effects throughout a large portion of the South Florida ecosystem due to interconnectedness of the regional water management system, and along with other features of CERP contributes significantly to the improvement of that ecosystem. The recommended plan's primary effects are that it significantly improves functional fish and wildlife habitat in the Northern Estuaries and specifically in the Caloosahatchee Estuary. This study considers the needs of and potential impacts to areas within the Caloosahatchee Estuary portion of the watershed and follow on studies will address additional watershed needs. The selected plan for C-43 provides storage consistent with the C-43 project originally formulated for in the CERP and it was formulated to optimize system-wide benefits in furtherance of CERP goals and objectives. The Everglades has been designated an International Biosphere Reserve (1976) and a World Heritage Site (1979) by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and a Wetland of International Importance (1987) in accordance with the Ramsar Convention. The portion of the Everglades ecosystem directly affected by the Caloosahatchee River (C-43) West Basin Storage Reservoir, including the project site and the Caloosahatchee River and Estuary, provides habitat for 21 Federally-listed endangered or threatened species, including the Florida panther, Everglades snail kite, wood stork, manatee, eastern indigo snake, Audubon's crested caracara and five species of sea turtles. In accordance with the WRDA 2000 Section 601(f)(2), individual CERP projects shall be justified by the environmental benefits

derived by the South Florida ecosystem. Similarly, Section 385.9(a) of the CERP Programmatic Regulations (33 CFR Part 385) requires that individual projects shall be formulated, evaluated, and justified based on their ability to contribute to the goals and purposes of the Plan and on their ability to provide benefits that justify costs on a next-added increment basis. The Caloosahatchee River (C-43) West Basin Storage Reservoir Project, operating in conjunction with other projects in the comprehensive plan produces an average annual increase of 12,809 habitat units in the Caloosahatchee River Estuary. On a next-added increment (NAI) basis (meaning adding the Caloosahatchee River (C-43) West Basin Storage Reservoir as the next project to be added to a system of projects) the Caloosahatchee River (C-43) West Basin Storage Reservoir project delivers about 15,300 average annual habitat units. Based on the first cost for restoration and the benefited area in the Caloosahatchee Estuary, the cost per acre benefited is about $7,146 per acre. On a next-added increment basis, the average annual cost per average annual habitat unit is approximately $2,740. Based on these parameters, the Caloosahatchee River (C-43) West Basin Storage Reservoir project is justified by the environmental benefits derived by the South Florida ecosystem and on a next-added increment basis.

7. The concepts of the *TWELVE ACTIONS FOR CHANGE*, released by the Chief of Engineers in 2007, have been fully integrated into the C-43 study process. From inception the district has implemented an effective comprehensive systems approach to design, construct, maintain, and update engineered systems with full stakeholder participation. As a result of this effective and transparent communication about risk and reliability with the public and within the Corps, the recommended project will better restore the Caloosahatchee Estuary to a more natural condition and conserve the resource for future generations. The lessons learned from other Everglades restoration studies, have been used by the district to continuously develop and update program specific guidance and have been applied to this project. The district developed stringent Design Criteria Memorandums to minimize risk of structural failure and formulated alternatives that comply with these DCMs. The ecological uncertainties associated with restoring the Everglades and interrelated ecosystem have been reduced by use of numerous predictive models. Accordingly the district has formulated alternatives with a long-term adaptive assessment (monitoring) and responsive management plan. The study participants from the district, South Florida Water Management District, several natural resource management agencies, non-government organizations, and academia have comprehensive experience in ecosystem restoration, and construction of dams and reservoirs. Numerous technical papers continue to be presented on all major aspects of this project. The district and its partners continue to mitigate ecosystem and structural risks, and provide technical information applicable to future projects and sustainable management of the whole South Florida system through ongoing monitoring and research.

8. Section 601(e)(5)(B) of the WRDA 2000 authorizes the Secretary of the Army to provide credit to the non-Federal sponsor for work completed by it during the period of construction pursuant to a project cooperation agreement and a determination by the Secretary that the work is integral to the CERP. As part of its initiative for early implementation of certain CERP projects known as the “Acceler8 Program,” the non-Federal sponsor has stated that it will construct the Caloosahatchee River (C-43) West Basin Storage Reservoir Project consistent with this report, in

advance of Congressional authorization and the signing of a project cooperation agreement. The non-Federal sponsor is exploring alternative project delivery methods to expedite implementation of the Caloosahatchee River (C-43) West Basin Storage Reservoir Project through the Acceler8 Program. Such delivery methods may include public-private partnerships in which the non-Federal sponsor contracts with a private or not-for-profit entity for services that may include designing, building, operating or financing these components. I believe that it would be in the public interest for this Project to be implemented expeditiously due to the early benefits to the surrounding habitat, as well as hydrologic benefits to Federal lands and estuaries in other portions of the South Florida ecosystem. Therefore, I recommend that should the non-Federal sponsor construct the Caloosahatchee River (C-43) West Basin Storage Reservoir Project prior to the execution of a project cooperation agreement for this Project, the non-Federal sponsor be credited for such construction costs at the time the project cooperation agreement for the Caloosahatchee River (C-43) West Basin Storage Reservoir Project is executed. Such credit would be applied toward the non-Federal sponsor's share of the costs associated with the implementation of the CERP as authorized by Section 601(e)(5)(C) of WRDA 2000, shall not include cash reimbursements, and shall be subject to: a) the authorization of the Caloosahatchee River (C-43) West Basin Storage Reservoir Project by law; b) a determination by the Secretary of the Army that the activities are integral to the CERP restoration project; c) a certification by the district engineer that the costs are reasonable, allowable, necessary, auditable, and allocable; and d) a certification by the district engineer that the activities have been implemented in accordance with U.S. Army Corps of Engineers design and construction standards and applicable Federal and State laws.

9. Credits for non-Federal design and construction will be evaluated based on the provision of documentation by the non-Federal sponsor. All documentation provided by the non-Federal sponsor will be thoroughly reviewed by the USACE to determine reasonable, allowable, necessary, auditable, and allocable costs. Upon completion of this review, a financial audit will be conducted prior to granting final credit. Coordination between the USACE and the Sponsor will occur throughout design and construction via the USACE Regulatory process. The credit afforded to the non-Federal sponsor will be limited to the lesser of the following: (1) actual costs that are reasonable, allowable, necessary, auditable, and allocable to the Project; or (2) the USACE's estimate of the cost of the work allocable to the Project had the USACE performed the work. The non-Federal sponsor intends to implement this work using its own funds and would not use funds originating from other Federal sources unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute and in accordance with Section 601 (e)(3) of WRDA 2000.

10. The Project complies with the following requirements of WRDA 2000:

a. Project Implementation Report (PIR). The requirements of a PIR as defined by Section 601(h)(4)(A.).

b. Water Reservations. Sections 601(h)(4)(A)(iii)(IV) and (V) require identification of the appropriate quantity, timing, and distribution of water dedicated and managed for the natural

system and the amount of water to be reserved or allocated for the natural system. Additional water delivered to and retained in natural areas was identified and will be reserved or allocated by the State of Florida.

c. Elimination or Transfer of Existing Legal Sources of Water. Section 601(h)(5)(A) states that existing legal sources of water shall not be eliminated or transferred until a new source of water supply of comparable quantity and quality is available to replace the water to be lost as a result of the Plan. Implementation of the Caloosahatchee River (C-43) West Basin Storage Reservoir project will not result in a transfer or elimination of sources of water to meet agricultural and urban demand in the Caloosahatchee River (C-43 Canal) Basin (remaining the same as before the project). Sources of water for the Seminole and Miccosukee Tribes and Everglades National Park are influenced by the regional water management system (C&SF Project, including Lake Okeechobee), and will not be affected by this project. Therefore, there will be no elimination or transfer as a result of this project on existing legal sources of supply for: agricultural or urban water supply, allocation or entitlement to the Seminole Indian Tribe of Florida under Section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e), the Miccosukee Tribe of Florida, water supply for Everglades National Park, and water supply for fish and wildlife

d. Maintenance of Flood Protection. Section 601 (h)(5)(B) states that the Plan shall not reduce levels of service for flood protection that are in existence on the date of enactment of this Act and in accordance with applicable law. Potential effects of the storage reservoir on water levels on adjacent lands were evaluated. In response to these evaluations, the Project includes a seepage management system, consisting of a seepage cut-off wall, seepage canal and pump to ensure that adjacent lands are not adversely affected. The operations of this project will not change the operations of the Caloosahatchee River (C-43 Canal); therefore, there will be no system-wide effects on flood protection as a result of the project.

11. Washington level review indicates that the plan recommended by the reporting officers is environmentally justified, technically sound, cost effective and socially acceptable. The plan conforms to essential elements of the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and complies with other administration and legislative policies and guidelines. The components of the four basic accounts established by P&G were considered during project formulation. The report documents that the recommended plan is cost effective in terms of the national economic development (NED). Regional economic development (RED) impacts would be relatively short-term. The PIR/EIS documents that there will be no significant unmitigated effects related to community social structure, life, health or general safety or other social effects (OSE). Further the report shows there will be significant improvement to environmental quality (EQ) as functional fish and wildlife habitats in the Caloosahatchee Estuary are significantly improved.

12. I generally concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the plan described herein for ecosystem restoration be

authorized for implementation as a Federal Project, with such modifications as in the discretion of the Chief of Engineers may be advisable, and subject to cost-sharing, financing, and other applicable requirements of Section 601 of WRDA 2000. In addition, I recommend that the non-Federal sponsor be authorized to receive credit for work accomplished prior to the execution of a project cooperation agreement for this Project, in accordance with the terms described in paragraph 9 of this report. Also, this recommendation is subject to the non-Federal sponsor agreeing to comply with all applicable Federal laws.

13. The recommendation contained herein reflects the information available at this time and current Departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities in the formulation of a national Civil Works construction program or the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding.

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